

Ursula Theuretzbacher, Ph.D.

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Professional Experience

1988-
present

Founder of the Center for Anti-Infective Agents (CEFAIA), Austria

Ursula Theuretzbacher founded the Center for Anti-Infective Agents (CEFAIA) in 1988. She is an expert for antibacterial drug research, discovery/development strategies and policies based on clinical and public health needs:

- Public and philanthropic funding strategies for antibacterial drug R&D and initiatives to recover the global pipeline
- Evaluation and comparative assessment of antibacterial drugs
- Optimization of antibacterial therapy concepts, dosing strategies and usage guidance

Areas of professional interest:

- Advise governments, NGOs, investors, national and international funding agencies and publicly funded research institutions on antibacterial drug R&D and responsible use strategies
- Coordinate policy activities to assure effective action to contain antimicrobial resistance, assess priorities in antibiotics R&D and global pipelines
- Initiate and coordinate major publicly funded international scientific projects in the antibiotics field
- Communicate and disseminate scientific results and knowledge to international research and policy bodies, to the health care community and students, advocacy and stakeholder support to contain antibiotic resistance
- Apply pharmacokinetic/pharmacodynamic principles to define dosage regimens for antibacterial drugs to optimize the activity while minimizing toxicity and emergence of resistance
- Train and educate scientists in the field of antibiotics R&D
- Evaluate and review national and large international collaborative research projects and grant applications in Europe and the US

Current and recent projects include:

- WHO Priority Pathogen List, WHO Clinical and Preclinical Pipeline Analysis, WHO Target Product Profiles, CARB-X preclinical pipeline analysis
- Consult with the Global Antibiotic R&D Partnership (GARDP) supporting their Antimicrobial Memory Recovery Programme
- Member of the scientific advisory board of REPAIR Impact Fund
- The 7th Framework Programme funded European Research and Technological Development:
Work package leader in the AIDA project (Preserving old antibiotics for the future): 6Mill €
- New Drugs for Bad Bugs program of the European Innovative Medicines Initiative (IMI):
 - Work package leader in the DRIVE-AB project (Re-investment in R&D and responsible antibiotic use), 9,4Mill€
 - Partner in the COMBACTE-MAGNET project (Combatting Bacterial Resistance in Europe - Molecules against Gram-Negative Infections), 167Mill €
- Leading and organizing international medical/scientific societies and associations:
 - Past-President of the International Society of Anti-Infective Pharmacology (ISAP)
 - Member of the Executive Committee of the International Society for Infectious Diseases (ISID)
 - Founding President of EPASG (ESCMID Pharmacokinetic/Pharmacodynamic Study Group)
 - Chair Person of the International Society of Chemotherapy (ISC) working group Future Antibiotics
- Education and training: international workshops, CME events e.g. four annual workshops at the Interscience Conference of Antimicrobial Agents and Chemotherapy (ICAAC) 2005-2016, one annual workshop at the European Conference for Clinical Microbiology and Infectious Diseases (ECCMID), international training courses in infectious diseases and antibiotic therapy in various European countries
- Organizing Conferences:
 - Scientific organization of the international conference on Anti-Infective PK/PD - Integrating Knowledge and Innovating Therapies" 2017, Vienna, Austria
 - Member of the Organizing Committee of the Conference on Drug Development to Meet the Challenge of Antimicrobial Resistance, 2016, Vienna
 - Scientific organization of the international conference on Reviving Of Old Antibiotics, 2014, Vienna, Austria
 - Scientific organization of the annual ISAP symposium in the US
 - Member of the Programme Committee for the annual ECCMID
 - Member of the Organizing Committee for the International Conference on Polymyxins 2013, 2015, 2018
- Evaluation and review of research and drug discovery projects for the EU (IMI, JPIAMR), Wellcome Trust, US National Institute of Health, Carb-X and national funding bodies (e.g. Austria, The Netherlands, Sweden, Greece, Germany)

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Publications

Selected invited reviews and leading articles

- Tängdén T, Pulcini C, Aagard H, Balasegaram M, Levy Hara G, Nathwani D, Sharland M, Theuretzbacher U, Cars O. Unavailability of old antibiotics threatens effective treatment for common bacterial infections. *Lancet Infect Dis* 2018, 18(3):242-244
- Paul M, Daikos GL, Durante-Mangoni E, Yahav D, Carmeli Y, Benattar YD, Skiada A, Andini R, Eliakim-Raz N, Nutman A, Zusman O, Antoniadou A, Pafundi PC, Adler A, Dickstein Y, Pavleas I, Zampino R, Daitch V, Bitterman R, Zayyad H, Koppel F, Levi I, Babich T, Friberg LE, Mouton JW, Theuretzbacher U, Leibovici L: Colistin alone versus colistin plus meropenem for treatment of severe infections caused by carbapenem-resistant Gram-negative bacteria: an open-label, randomised controlled trial. *Lancet Infect Dis* 2018, 18(4):391-400
- Paul M, Theuretzbacher U. β -lactam prolonged infusion: it's time to implement! *Lancet Infect Dis*. 2018, 18(1):13-14
- Theuretzbacher U. Global antimicrobial resistance in Gram-negative pathogens and clinical need. *Curr Opin Microbiol*. 2017;15:39:106-112
- Tacconelli E, Carrara E, Savoldi A, Harbarth S, Mendelson M, Monnet DL, Pulcini C, Kahlmeter G, Kluytmans J, Carmeli Y, Ouellette M, Outterson K, Patel J, Cavalieri M, Cox EM, Houchens CR, Grayson ML, Hansen P, Singh N, Theuretzbacher U, Magrini N; WHO Pathogens Priority List Working Group. Discovery, research, and development of new antibiotics: the WHO priority list of antibiotic-resistant bacteria and tuberculosis. *Lancet Infect Dis* 2018 Mar;18(3):318-327
- Theuretzbacher U, Savic M, Årdal C, Outterson K. Market watch: Innovation in the preclinical antibiotic pipeline. *Nat Rev Drug Discov*. 2017;16(11):744-745
- Theuretzbacher U: Antibiotic innovation for future public health needs. *Clin Microbiol Infect*. 2017;23:713-7.
- Theuretzbacher U: New drugs - will they solve the problem of resistance to antibiotics? *Clin Microbiol Infect*. 2017;23(10):695-696
- Theuretzbacher U, Årdal C, Harbarth S: Linking Sustainable Use Policies to Novel Economic Incentives to Stimulate Antibiotic Research and Development. *Infect Dis Rep*. 2017;9(1):6836
- Tängdén T, Ramos Martín V, Felton TW, Nielsen EI, Marchand S, Brüggemann RJ, Bulitta JB, Bassetti M, Theuretzbacher U, Tsuji BT, Wareham DW, Friberg LE, De Waele JJ, Tam VH, Roberts JA; Infection Section for the European Society of Intensive Care Medicine, the Pharmacokinetics and Pharmacodynamics Study Group of the European Society of Clinical Microbiology and Infectious Diseases, the International Society of Anti-Infective Pharmacology and the Critically Ill Patients Study Group of European Society of Clinical Microbiology and Infectious Diseases: The role of infection models and PK/PD modelling for optimising care of critically ill patients with severe infections. *Intensive Care Med*. 2017;43(7):1021-1032
- Pulcini C, Mohrs S, Beovic B, Gyssens I, Theuretzbacher U, Cars O; ESCMID Study Group for Antibiotic Policies (ESGAP), ReAct Working Group on Old Antibiotics. Forgotten antibiotics: a follow-up inventory study in Europe, the USA, Canada and Australia *Int J Antimicrob Agents*. 2017;49(1):98-101
- Theuretzbacher U. Antibacterial innovation in European SMEs. *Nat Rev Drug Discov*. 2016;15(12):812-13
- Huttner A, Leibovici L, Theuretzbacher U, Huttner B, Paul M. Closing the evidence gap in infectious disease: point-of-care randomization and informed consent. *Clin Microbiol Infect*. 2017;23(2):73-77
- Theuretzbacher U, Barbee L, Connolly K, Drusano G, Fernandes P, Hook E, Jerse A, O'Donnell J, Unemo M, Van Bambeke F, VanScoy B, Warn P, Werth BJ, Franceschi F, Alirol E. Pharmacokinetic/pharmacodynamic considerations for new and current therapeutic drugs for uncomplicated gonorrhoea-challenges and opportunities. *Clin Microbiol Infect*. 2020 Aug 13
- Theuretzbacher U. Dual-mechanism antibiotics. *Nat Microbiol*. 2020 Aug;5(8):984-985
- Paul M, Harbarth S, Huttner A, Thwaites GE, Theuretzbacher U, Bonten MJM, Leibovici L. Investigator-initiated randomized controlled trials in infectious diseases: better value for money for registration trials of new antimicrobials. *Clin Infect Dis*. 2020 Jul 3
- Nutman A, Lellouche J, Temkin E, Daikos G, Skiada A, Durante-Mangoni E, Dishon-Benattar Y, Bitterman R, Yahav D, Daitch V, Bernardo M, Iossa D, Zusman O, Friberg LE, Mouton JW, Theuretzbacher U, Leibovici L, Paul M, Carmeli Y; AIDA Study Group. Colistin plus meropenem for carbapenem-resistant Gram-negative infections: in vitro synergism is not associated with better clinical outcomes. *Clin Microbiol Infect*. 2020 Apr 3
- Kristoffersson AN, Rognås V, Brill MJE, Dishon-Benattar Y, Durante-Mangoni E, Daitch V, Skiada A, Lellouche J, Nutman A, Kotsaki A, Andini R, Eliakim-Raz N, Bitterman R, Antoniadou A, Karlsson MO, Theuretzbacher U, Leibovici L, Daikos GL, Mouton JW, Carmeli Y, Paul M, Friberg LE. Population pharmacokinetics of colistin and the relation to survival in critically ill patients infected with colistin susceptible and carbapenem-resistant bacteria. *Clin Microbiol Infect*. 2020 Mar 22

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- Theuretzbacher U, Bush K, Harbarth S, Paul M, Rex JH, Tacconelli E, Thwaites GE. Critical analysis of antibacterial agents in clinical development. *Nat Rev Microbiol.* 2020 May;18(5):286-298
- Theuretzbacher U, Outterson K, Engel A, Karlén A. The global preclinical antibacterial pipeline. *Nat Rev Microbiol.* 2020 May;18(5):275-285. doi: 10.1038/s41579-019-0288
- Lepore C, Silver L, Theuretzbacher U, Thomas J, Visi D. The small-molecule antibiotics pipeline: 2014-2018. *Nat Rev Drug Discov.* 2019 Sep;18(10):739
- Theuretzbacher U, Piddock LJV. Non-traditional Antibacterial Therapeutic Options and Challenges. *Cell Host Microbe.* 2019 Jul 10;26(1):61-72
- Theuretzbacher U, Gottwalt S, Beyer P, Butler M, Czaplowski L, Lienhardt C, Moja L, Paul M, Paulin S, Rex JH, Silver LL, Spigelman M, Thwaites GE, Paccaud JP, Harbarth S. Analysis of the clinical antibacterial and antituberculosis pipeline. *Lancet Infect Dis.* 2019 Feb;19(2):e40-e50
- Theuretzbacher U, Paul M. Developing a new antibiotic for extensively drug-resistant pathogens: the case of plazomicin. *Clin Microbiol Infect.* 2018 Dec;24(12):1231-1233
- Nation RL, Theuretzbacher U, Tsuji BT; International Society of Anti-Infective Pharmacology (ISAP). Concentration-dependent plasma protein binding: Expect the unexpected. *Eur J Pharm Sci.* 2018 Sep 15;122:341-346
- Huttner A, Kowalczyk A, Turjeman A, Babich T, Brossier C, Eliakim-Raz N, Kosiek K, Martinez de Tejada B, Roux X, Shiber S, Theuretzbacher U, von Dach E, Yahav D, Leibovici L, Godycki-Cwirko M, Mouton JW, Harbarth S. Effect of 5-Day Nitrofurantoin vs Single-Dose Fosfomicin on Clinical Resolution of Uncomplicated Lower Urinary Tract Infection in Women: A Randomized Clinical Trial. *JAMA.* 2018 May 1;319(17):1781-1789
- Dickstein Y, Leibovici L, Yahav D, Eliakim-Raz N, Daikos GL, Skiada A, Antoniadou A, Carmeli Y, Nutman A, Levi I, Adler A, Durante-Mangoni E, Andini R, Cavezza G, Mouton JW, Wijma RA, Theuretzbacher U, Friberg LE, Kristoffersson AN, Zusman O, Koppel F, Dishon Benattar Y, Altunin S, Paul M; AIDA consortium: Multicentre open-label randomised controlled trial to compare colistin alone with colistin plus meropenem for the treatment of severe infections caused by carbapenem-resistant Gram-negative infections (AIDA): a study protocol. *BMJ Open.* 2016;6(4):e009956
- Theuretzbacher U, Paul M: Revival of old antibiotics: structuring the re-development process to optimize usage. *Clin Microbiol Infect.* 2015;21(10):878-80
- Muller AE, Theuretzbacher U, Mouton JW: Use of old antibiotics now and in the future from a pharmacokinetic/pharmacodynamic perspective. *Clin Microbiol Infect.* 2015;21(10):881-5.
- Huttner A, Verhaegh EM, Harbarth S, Muller AE, Theuretzbacher U, Mouton JW. Nitrofurantoin revisited: a systematic review and meta-analysis of controlled trials. *J Antimicrob Chemother.* 2015;70(9):2456-64
- Theuretzbacher U, Van Bambeke F, Cantón R, Giske CG, Mouton JW, Nation RL, Paul M, Turnidge JD, Kahlmeter G. Reviving old antibiotics. *J Antimicrob Chemother.* 2015;70(8):2177-81
- Harbarth S, Theuretzbacher U, Hackett J; on behalf of the DRIVE-AB consortium. Antibiotic research and development: business as usual? *J Antimicrob Chemother.* 2015;70(6):1604-7
- Nation R, Li J, Cars O, Couet W, Dudley M, Kaye K, Mouton J, Paterson D, Tam V, Theuretzbacher U, Tsuji B, Turnidge J: Framework for optimising the clinical use of colistin and polymyxin B: The Prato Polymyxin Consensus. *Lancet Infectious Diseases* 2014,15(2):225-234
- Paul M, Carmeli Y, Durante-Mangoni E, Mouton JW, Tacconelli E, Theuretzbacher U, Mussini C, Leibovici L. Combination therapy for carbapenem-resistant Gram-negative bacteria. *J Antimicrob Chemother* 2014,69(9):2305-2309
- JA Roberts, MHA Aziz, J Lipman, JW Mouton, AA Vinks, TW Felton, WW Hope, A Farkas, MN Neely, JJ Schentag, G Drusan, OR Frey, U Theuretzbacher, JL Kuti. On behalf of The International Society of Anti-Infective Pharmacology (ISAP) and the PK/PD Study Group of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID). Individualised antibiotic dosing for patients who are critically ill: challenges and potential solutions. *Lancet Infect Dis.* 2014;14(6):498-509
- Theuretzbacher U. Product information for parenteral colistin varies substantially across Europe. *J Antimicrob Chemother* 2014, 69(7):1987-92
- Nation RL, Li J, Cars O, Couet W, Dudley MN, Kaye KS, Mouton JW, Paterson DL, Tam VH, Theuretzbacher U, Tsuji BT, Turnidge JD. Consistent global approach on reporting of colistin doses to promote safe and effective use. *Clin Infect Dis.* 2014 58(1):139-41
- Kaier K, Lambert ML, Frank UK, Vach W, Wolkewitz M, Tacconelli E, Rello J, Theuretzbacher U, Martin M. Impact of availability of guidelines and active surveillance in reducing the incidence of ventilator-associated pneumonia in Europe and worldwide. *BMC Infect Dis.* 2014;12;14(1):199
- Theuretzbacher U. Global antibacterial resistance - The never-ending story. *Global J Antimicrob Res.* 2013; 1(2):63-69

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- Tambyah AP, Levy Hara G, Daikos GL, Falagas ME, Mazzei T, Mouton JW, Novelli A, Chen B, Wang MG, Ko WC, Li T, Fan X, Theuretzbacher U: Treatment of extensively drug-resistant Gram-negative infections in critically ill patients: Outcome of a consensus meeting at the 13th Asia Pacific Congress of Clinical Microbiology and Immunology October 2012. *Global J Antimicrob Res.* September 2013;1(3):117-122
- U. Theuretzbacher: Pharmacokinetic and pharmacodynamic issues for antimicrobial therapy in patients with cancer. *Clin Infect Dis.* 2012;54(12):1785-92
- Theuretzbacher U. Accelerating resistance, inadequate antibacterial pipelines and international responses. *Int J Antimicrob Agents.* 2012;39(4):295-9
- Theuretzbacher U, Mouton JW. (Editorial): Update on antibacterial and antifungal drugs – can we master the resistance crisis? *Curr Opin Pharmacol.* 2011;11(5):429-432
- Theuretzbacher U. Resistance drives antibacterial drug development. *Curr Op Pharmacol.* 2011;11(5):433-8
- Zeitlinger MA, Derendorf H, Mouton JW, Cars O, Craig WA, Andes D, Theuretzbacher U. Protein binding – do we ever learn? *Antimicrob Agents Chemother.* 2011;55(7):3067-74
- Gonzalez D, Conrado DJ, Theuretzbacher U, Derendorf H. The Effect of Critical Illness on Drug Distribution. *Curr Pharm Biotechnol.* 2011;12(12):2030-2036.
- Mouton JW, Ambrose PG, Canton R, Drusano GL, Harbarth S, Macgowan A, Theuretzbacher U, Turnidge J.: Conserving antibiotics for the future: New ways to use old and new drugs from a pharmacokinetic and pharmacodynamic perspective. *Drug Resist Updat.* 2011;14(2):107-17.

Active Membership in Professional Societies

American Society for Microbiology (ASM),
European Society of Clinical Microbiology and Infectious Diseases (ESCMID),
International Society of Anti-Infective Pharmacology (ISAP),
International Society of Infectious Diseases (ISID)
International Society of Chemotherapy (ISC)

Education

- **Ph.D. in Microbiology**
University of Vienna and University of Innsbruck, Austria